

REMARKS

Applicant respectfully requests reconsideration of this application, as amended, and consideration of the following remarks. Claims 1, 14, 16, 17, 22 and 23 have been amended. Claims 4 and 15 have been canceled. Claims 1-3, 5-14 and 16-25 remain pending. Claims 1-25 stand rejected under 35 U.S.C. 112. Claim 22 stands rejected under 35 U.S.C. 102(e). Claims 1-4 and 19-21 stand rejected under 35 U.S.C. 103(a).

Telephone Interview

Applicant thanks Examiner Smith for his time and responsiveness in clarifying the office action during our 2/07/06 telephone interview. Applicant has reviewed the 2/2/05 and 7/11/05 IDS. Each of the references identified in the IDSs were provided to Applicant and/or Applicant's attorney from related search reports and/or office actions in related patent applications. Therefore, it is the opinion that each and every reference listed is relevant to the prosecution of the present application. Applicant further reviewed each of the foreign references submitted with the 2/2/05 and 7/11/05 IDS and found that an English translation of the abstract of each of the non-English language references was in fact submitted with the IDSs.

Applicant has amended the specification to update the priority claim with the current status of the parent patents.

Amendments

Amendments to the Claims

Applicant has amended the claims to more particularly point out what Applicant regards as the invention. No new matter has been added as a result of these amendments.

Rejections

Rejections under 35 U.S.C. §112, Second Paragraph

Claims 1-25 stand rejected under 35 U.S.C. 112 Second Paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the

steps, specifically the steps of developing a dynamic meniscus etch (it is not clear to the Examiner what steps the applicant is trying to claim in the “development” of the etch). Applicant has amended Claims 1, 22 and 23 to more particularly point out and claim what Applicant regards as the invention.

Claims 14-18 stand rejected under 35 U.S.C. 112 Second Paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps, specifically the steps in making the “determination.” Applicant has amended Claims 14-18 to more particularly point out and claim what Applicant regards as the invention.

Applicant therefore respectfully requests that the rejections of claims 1-25 under 35 U.S.C. 112 Second Paragraph, be withdrawn and claims 1-3, 5-14 and 16-25 be found allowable.

Rejections under 35 U.S.C. §102(e)

Claim 22 stand rejected under 35 U.S.C. §102(e) as being anticipated by the Lin reference (US Pat 6,383,935). Applicant respectfully traverses the rejection.

The Lin reference discloses that chemical mechanical polishing (CMP) is known to cause dishing when the surface being planarized includes a wide trench partially filled with metal. This problem has been overcome by first filling the trench with a material whose polishing rate under CMP is similar to that of the metal in the trench. Spin-coating is used for this so that only the trench gets filled. After CMP, any residue of this material is removed, leaving behind a surface that has been planarized to the intended extent without the introduction of significant dishing and with minimum erosion of the metal.

It is well known that CMP applies considerable lateral forces to the structures, features and devices under the layer being polished. The lateral forces can damage the structures, features and devices by causing delamination, voids, fractures, etc. that damage or weaken the structures, features and devices.

As to claim 22, the Lin reference does not disclose nor even suggest removing a bulk of the overburden portion without imparting mechanical stress to the plurality of features, a remaining portion of the overburden portion having a non-uniformity. Nor does the Lin reference disclose nor even suggest using a dynamic liquid meniscus, specifically, forming a dynamic liquid meniscus etch process recipe including quantifying the non-uniformity; and calculating an etch process chemistry concentration and application time corresponding to the quantified non-uniformity; and applying a dynamic liquid meniscus etch process using the dynamic liquid meniscus etch process recipe to correct the non-uniformity of the remaining portion of the overburden portion.

Accordingly, Applicant respectfully submits that Applicant's invention as claimed in claim 22 is not anticipated by the Lin reference, and respectfully request the withdrawal of the rejection under 35 U.S.C. §102(e).

Rejections under 35 U.S.C. §103(a)

Claims 1-4 ad 19-21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the Lin reference in view of the Uzoh reference (US Pat. 6,234,870). Applicant respectfully traverses the rejection.

The Uzoh reference discloses an apparatus for removing material from a substrate including a plurality of polishing cells. A first polishing cell detects the material on the substrate and performs a first polishing operation for removing material from the substrate. The first polishing cell includes at least one sensor for characterizing the material on the substrate and at least one polishing tool for removing material from the substrate. A second polishing cell includes at least one polishing tool for completing the polishing process.

It is well known that CMP applies considerable lateral forces to the structures, features and devices under the layer being polished. The lateral forces can damage the structures, features and devices by causing delamination, voids, fractures, etc. that damage or weaken the structures, features and devices.

As to claim 1 neither the Lin reference nor the Uzoh reference, whether considered alone or in combination teach or suggest a method for removing a bulk of the overburden portion without imparting mechanical stress to the plurality of features.

Nor does either of the Lin reference or the Uzoh reference, whether considered alone or in combination teach or suggest using a dynamic liquid meniscus, specifically, forming a dynamic liquid meniscus etch process recipe including quantifying the non-uniformity; and calculating an etch process chemistry concentration and application time corresponding to the quantified non-uniformity; and applying a dynamic liquid meniscus etch process using the dynamic liquid meniscus etch process recipe to correct the non-uniformity of the remaining portion of the overburden portion.

Accordingly, Applicant respectfully submits that Applicant's invention as claimed in claim 1-3 and 19-21 are not rendered obvious by either of the Lin reference nor the Uzoh reference, whether considered alone or in combination, and respectfully request the withdrawal of the rejections under 35 U.S.C. §103(a).

Allowable Subject Matter

Applicant thanks the Examiner for indicating that claims 5, 13 and 23-25 contain allowable subject matter if rewritten to overcome the 35 USC 112, second paragraph rejections set forth in more detail above. Claims 1, 22 and 23 have been so amended. In view of these amendments, Applicant respectfully submits that claims 5, 13 and 23-25 are now in condition for allowance, and request allowance of said claims.

SUMMARY

In view of the foregoing amendments and remarks, Applicant respectfully submits that the pending claims are in condition for allowance. Applicant respectfully requests reconsideration of the application and allowance of the pending claims.

If the Examiner determines the prompt allowance of these claims could be facilitated by a telephone conference, the Examiner is invited to contact George B. Leavell at (408) 749-6900, ext 6923.

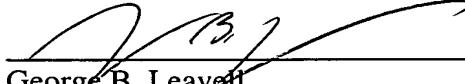
Deposit Account Authorization

Authorization is hereby given to charge our Deposit Account No. 50-0805 (Ref LAM2P447) for any charges that may be due or credit our account for any overpayment. Furthermore, if an extension is required, then Applicant hereby requests such extension.

Respectfully submitted,

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Dated: February 7, 2006


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